Appln No.: 09/786,502
Amendment Dated: September 8, 2003
Reply to Office Action of March 6, 2003

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A fusion receptor composition having the structure:
PSMA-scFv : optional connector : cytoplasmic domain,
wherein PSMA-scFv ~~represents~~ is a single chain antibody cloned from the V region genes of a hybridoma specific for prostate-specific membrane antigen, the cytoplasmic domain is the cytoplasmic domain of a molecule which functions as a transducer of a mammalian immune response in the presence of a costimulatory factor, and the connector ~~is a region of~~ comprises one or more amino acids disposed between the PSMA-scFv and the cytoplasmic domain, said connector to be of sufficient length to allow both the PSMA-scFv and the cytoplasmic domain to retain function, whereby the fusion receptor is effective when expressed in a T-cell to promote a cellular immune response to prostate-specific membrane antigen.

2. (original) The fusion receptor of claim 1, wherein the cytoplasmic domain comprises a ζ-chain of CD3.

3. (currently amended) The fusion receptor of claim 1, wherein the cytoplasmic domain is ~~derived from~~ a CD28 cytoplasmic domain.

4. (currently amended) The fusion receptor of claim 3, wherein the cytoplasmic domain is encoded by a portion of CD28 cDNA ~~spanning amino acids~~ including bases 336-663.

5. (currently amended) The fusion receptor of claim 1, wherein the cytoplasmic domain is ~~derived from~~ a 41-BB cytoplasmic domain.

6. (previously amended) The fusion receptor of claim 1, wherein the connector is a CD8 hinge.

7. (previously amended) A method for treating a patient suffering from cancer, wherein the cells of the cancer or neovasculature associated with the cancer express prostate-specific membrane antigen, comprising the steps of:

(a) preparing an expression vector comprising an expressible polynucleotide molecule encoding a fusion protein in accordance with claim 1;

(b) transducing the expression vector into peripheral blood lymphocytes obtained from the patient to obtain transduced lymphocytes expressing the fusion protein; and

(c) reintroducing the transduced lymphocytes into the patient, whereby said transduced lymphocytes respond to antigen on the surface of the cells of the cancer to generate a cytolytic immune response to the cells of the cancer.

8. (original) The method of claim 7, wherein the expression vector is transduced into the peripheral blood lymphocytes in an *ex vivo* process.

9. (original) The method of claim 7, wherein the expression vector is an SFG vector.

10. (original) The method of claim 9, wherein the expression vector is transduced into patient PBL using gibbon ape leukemia virus envelope-pseudotyped virions.

11. (original) The method of claim 8, wherein the expression vector is transduced into patient PBL using gibbon ape leukemia virus envelope-pseudotyped virions.

12. (previously amended) Peripheral blood lymphocytes transduced with and expressing a fusion receptor in accordance with claim 1.

13. (previously amended) An expression vector comprising a polynucleotide sequence encoding a fusion receptor in accordance with claim 1 and control sequences effective to promote expression of the fusion receptor in mammalian lymphocytes.

14. (original) The vector of claim13, wherein the expression vector is an SFG vector.

15. (original) The vector of claim 14, wherein the expression vector is packaged in gibbon ape leukemia virus envelope-pseudotyped virions.

16. (original) The vector of claim 13, wherein the expression vector is packaged in gibbon ape leukemia virus envelope-pseudotyped virions.

17. (previously presented) The fusion receptor of claim 2, wherein the connector is a CD8 hinge.

18. (previously presented) The fusion receptor of claim 3, wherein the connector is a CD8 hinge.

19. (previously presented) The fusion receptor of claim 4, wherein the connector is a CD8 hinge.

20. (previously presented) The fusion receptor of claim 5, wherein the connector is a CD8 hinge.

21. (previously presented) A method for treating a patient suffering from cancer, wherein the cells of the cancer or neovasculature associated with the cancer express prostate-specific membrane antigen, comprising the steps of:

(a) preparing an expression vector comprising an expressible polynucleotide molecule encoding a fusion protein in accordance with claim 2;

(b) transducing the expression vector into peripheral blood lymphocytes obtained from the patient to obtain transduced lymphocytes expressing the fusion protein; and

(c) reintroducing the transduced lymphocytes into the patient, whereby said transduced lymphocytes respond to antigen on the surface of the cells of the cancer to generate a cytolytic immune response to the cells of the cancer.

22. (previously presented) A method for treating a patient suffering from cancer, wherein the cells of the cancer or neovasculature associated with the cancer express prostate-specific membrane antigen, comprising the steps of:

(a) preparing an expression vector comprising an expressible polynucleotide molecule encoding a fusion protein in accordance with claim 3;

(b) transducing the expression vector into peripheral blood lymphocytes obtained from the patient to obtain transduced lymphocytes expressing the fusion protein; and

(c) reintroducing the transduced lymphocytes into the patient, whereby said transduced lymphocytes respond to antigen on the surface of the cells of the cancer to generate a cytolytic immune response to the cells of the cancer.

23. (previously presented) A method for treating a patient suffering from cancer, wherein the cells of the cancer or neovasculature associated with the cancer express prostate-specific membrane antigen, comprising the steps of:

(a) preparing an expression vector comprising an expressible polynucleotide molecule encoding a fusion protein in accordance with claim 4;

(b) transducing the expression vector into peripheral blood lymphocytes obtained from the patient to obtain transduced lymphocytes expressing the fusion protein; and

(c) reintroducing the transduced lymphocytes into the patient, whereby said transduced lymphocytes respond to antigen on the surface of the cells of the cancer to generate a cytolytic immune response to the cells of the cancer.

24. (previously presented) A method for treating a patient suffering from cancer, wherein the cells of the cancer or neovasculature associated with the cancer express prostate-specific membrane antigen, comprising the steps of:

(a) preparing an expression vector comprising an expressible polynucleotide molecule encoding a fusion protein in accordance with claim 5;

(b) transducing the expression vector into peripheral blood lymphocytes obtained from the patient to obtain transduced lymphocytes expressing the fusion protein; and

(c) reintroducing the transduced lymphocytes into the patient, whereby said transduced lymphocytes respond to antigen on the surface of the cells of the cancer to generate a cytolytic immune response to the cells of the cancer.

25. (previously presented) Peripheral blood lymphocytes transduced with and expressing a fusion receptor in accordance with claim 2.

26. (previously presented) Peripheral blood lymphocytes transduced with and expressing a fusion receptor in accordance with claim 3.

27. (previously presented) Peripheral blood lymphocytes transduced with and expressing a fusion receptor in accordance with claim 4.

28. (previously presented) Peripheral blood lymphocytes transduced with and expressing a fusion receptor in accordance with claim 5.

29. (previously presented) An expression vector comprising a polynucleotide sequence encoding a fusion receptor in accordance with claim 2 and control sequences effective to promote expression of the fusion receptor in mammalian lymphocytes.

30. (previously presented) An expression vector comprising a polynucleotide sequence encoding a fusion receptor in accordance with claim 3 and control sequences effective to promote expression of the fusion receptor in mammalian lymphocytes.

31. (previously presented) An expression vector comprising a polynucleotide sequence encoding a fusion receptor in accordance with claim 4 and control sequences effective to promote expression of the fusion receptor in mammalian lymphocytes.

32. (previously presented) An expression vector comprising a polynucleotide sequence encoding a fusion receptor in accordance with claim 5 and control sequences effective to promote expression of the fusion receptor in mammalian lymphocytes.

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